

# HEAT CONTROLLER, INC.

## Wall Mounted Mini-Split System

DMC24DB-1, DMH24DB-1

DMC36TB-1, DMH36TB-1

## Air Conditioning / Heat Pump INSTALLATION INSTRUCTIONS

### IMPORTANT!

**Please read this instruction sheet completely before installing the product.**

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.



### WARNING

- Installation or repairs made by unqualified persons can result in hazards to you and others. Installation **MUST** conform with local building codes or, in the absence of local codes, with the National Electrical Code NFPA 70/ANSI C1-1993 or current edition and Canadian Electrical Code Part1 CSA C.22.1.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury and/or death.

**CAUTION:** Improper installation, adjustment, alteration, service or maintenance can void the warranty.

The weight of the condensing unit requires caution and proper handling procedures when lifting or moving to avoid personal injury. Use care to avoid contact with sharp or pointed edges.

### Safety Precautions

- Always wear safety eye wear and work gloves when installing equipment.
- Never assume electrical power is disconnected. Check with meter and equipment.
- Keep hands out of fan areas when power is connected to equipment.
- R-410A causes frostbite burns.
- R-410A is toxic when burned.

**NOTE TO INSTALLING DEALER :** The Owners Instructions and Warranty are to be given to the owner or prominently displayed near the indoor Furnace/Air Handler Unit.



### Special warnings

#### When wiring:

**Electrical shock can cause severe personal injury or death. Only a qualified, experienced electrician should attempt to wire this system.**

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause accidental injury or death.
- Ground the unit following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

#### When transporting:

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your finger.

#### When installing...

**... in a wall:** Make sure the wall is strong enough to hold the unit's weight.

It may be necessary to construct a strong wood or metal frame to provide added support.

**... in a room:** Properly insulate any tubing run inside a room to prevent "sweating" that can cause dripping and water damage to wall and floors.

**... in moist or uneven locations:** Use a raised concrete pad or concrete blocks provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

**... in an area with high winds:** Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

**... in a snowy area(for Heat Pump Model):** Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

#### When connecting refrigerant tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Check carefully for leaks before starting the test run.

#### When servicing

- Turn the power OFF at the main power box(mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.

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## ***Installation Requirements***

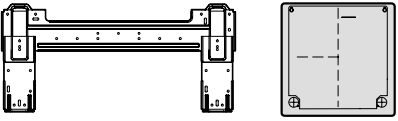



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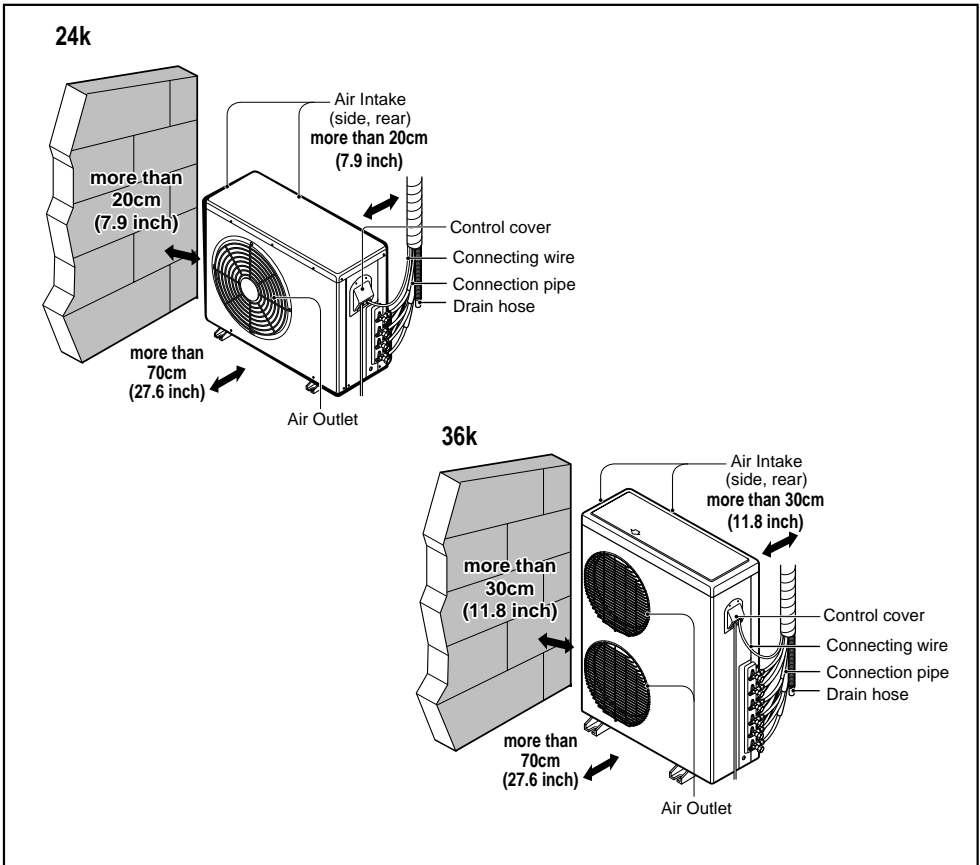
## ***Required Tools***

- Level gauge
- Screw driver
- Electric drill
- Hole core drill (ø50mm)
- Horizontal meter
  
- Flaring tool set
- Specified torque wrenches  
    1.8kg.m, 4.2kg.m, 5.5kg.m, 6.6kg.m  
    (different depending on model No.)
- Spanner .....Half union
  
- A glass of water
- Screw driver
  
- Hexagonal wrench(4mm)
- Gas-leak detector
- Vacuum pump
- Gauge manifold
  
- Owner's manual
- Thermometer
- Holder Remote Control

# Installation Parts Provided

## Standard Type

<p>Installation plate</p> 	<p>Type "A" screws and plastic anchors</p> 
<p>Type "B" screws</p> 	<p>Holder Remote Control</p> 



# Safety Precautions



To prevent the injury of the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.

**⚠ WARNING** This symbol indicates the possibility of death or serious injury.

**⚠ CAUTION** This symbol indicates the possibility of injury or damage to properties only.

■ The meanings of the symbols used in this manual are as shown below.

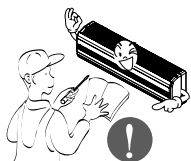
	<b>Be sure not to do.</b>
	<b>Be sure to follow the instruction.</b>

## ⚠ WARNING

### ■ Installation

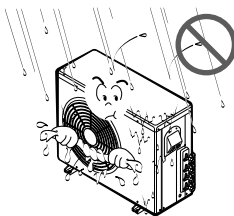
For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center.

- There is risk of fire or electric shock.



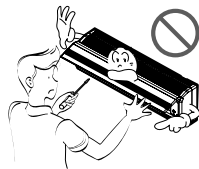
Install the panel and the cover of control box securely.

- There is risk of fire or electric shock.



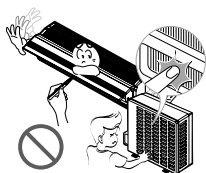
Do not install, remove, or re-install the unit by yourself (customer).

- There is risk of fire, electric shock, explosion or injury.



Be cautious when unpacking and installing the product.

- Shape edges could cause injury. Be especially careful of the sharp edges.



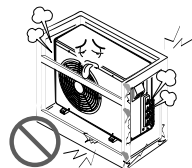
For installation, always contact the dealer or an Authorized Service Center.

- There is risk of fire, electric shock, explosion, or injury.



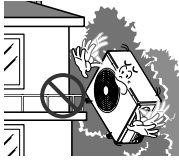
Do not install the product on a defective installation stand.

- It may cause injury, accident, or damage to the product.



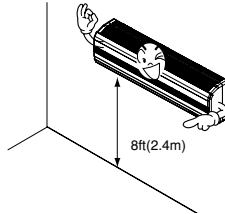
**Be sure the installation area does not deteriorate with age.**

- If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.



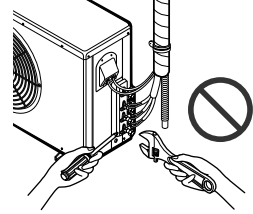
**Install the indoor unit on the wall where the height from the floors more than 8ft(2.4m)**

- There are sharp moving parts that could cause personal injury.



**Do not handle the pipe by yourself(customer)**

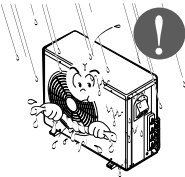
- High-Pressure refrigerant may cause personal injury.



**■ Operation**

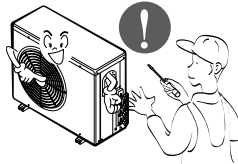
**Do not allow water to run into electric part.**

- There is risk of fire, failure of the product, and/or electric shock.



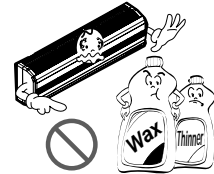
**Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.**

- Moisture may condense and wet or damage furnishings.



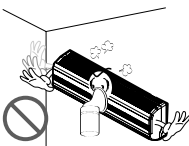
**Do not store or use flammable gas or combustibles near the air conditioner.**

- There is risk of fire or product failure.



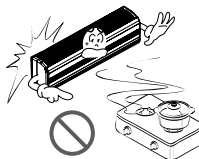
**Do not use the product in a tightly closed space for a long time.**

- Oxygen deficiency could occur.
- Some ventilation by opening window is necessary for the fresh air.



**When flammable gas leaks, turn off the gas and open a window for ventilation before turning the product on. Do not use the telephone or turn switches on or off.**

- There is risk of explosion or fire.



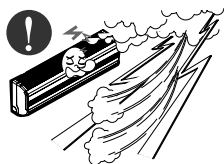
**Turn of breaker to the unit if strange sounds odors or smoke comes from it.**

- There is risk of fireproduct failure and/or electric shock.



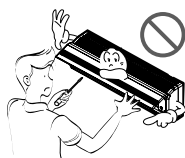
**Stop operation and close any window in storm or hurricane. before the hurricane arrives.**

- There is risk of property damage, failure of product, or electric shock.



**Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

- There is risk of physical injury, electric shock, or product.



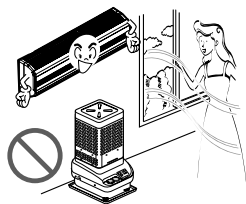
**When the product is soaked (flooded or submerged), contact an Authorized Service Center.**

- There is risk of electrical shock.



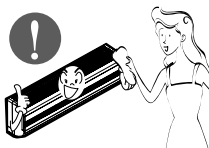
**Ventilate the product from time to time when operating it together with a stove, etc.**

- There is risk of fire or electrical shock.



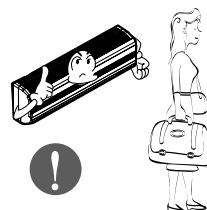
**Turn off breaker to the appliance before performing cleaning or maintenance.**

- There is risk of electric shock.



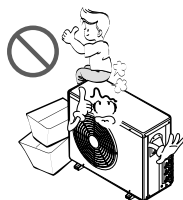
**When the product is not being used for a long time turn off the breaker.**

- There is risk of product damage or failure, or unintended operation.



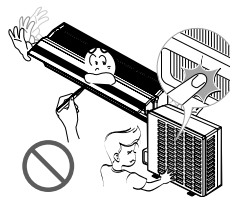
**Take care to ensure that nobody could step on or fall onto the outdoor unit.**

- There could result in personal injury and product damage.



**Do not insert hands or other objects through the air inlet or outlet while the air conditioner is on.**

- There are sharp and moving parts that could cause personal injury.

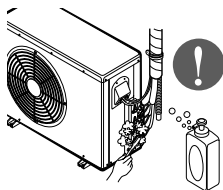


# CAUTION

## Installation

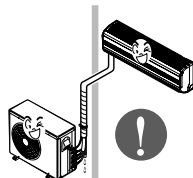
**Always check for gas(refrigerant) leakage after installation or repair of product.**

- Low refrigerant levels may cause product failure.



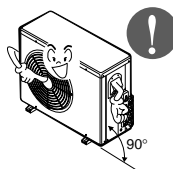
**Install the drain hose to ensure that water is drained away properly.**

- A bad connection may cause water leakage.



**Keep level even when installing the product.**

- To avoid vibration or water leakage.



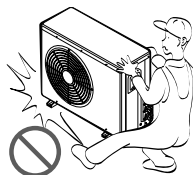
**Do not install the product where the noise or hot air from the outdoor unit could offend the neighbors.**

- It may cause a problem for your neighbors.



**Use two or more people to lift and transport the air conditioner**

- Avoid personal injury.



**Do not install the product where it will be exposed to sea wind (salt spray) directly.**

- It may cause corrosion in the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.



## Operation

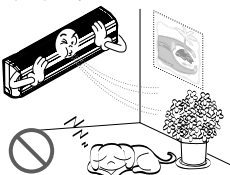
**Do not direct airflow at room occupants.**

- This could damage your health.



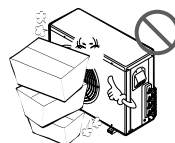
**Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.**

- There is risk of damage or loss of property.



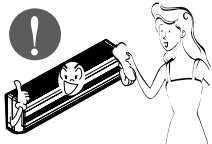
**Do not block the inlet or outlet of air flow.**

- It may cause product failure.



**Use a soft cloth to clean.  
Do not use harsh  
detergents, solvents, etc.**

- There is risk of fire, electric shock or damage to the plastic parts of the product.



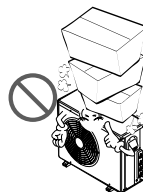
**Do not touch the metal  
parts of the product when  
removing the air filter. They  
are very sharp!**

- There is risk of personal injury.



**Do not step on or put  
anything on the product.  
(outdoor unit)**

- There is risk of personal injury and failure of product.



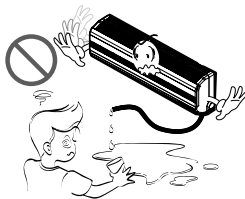
**Always insert the filter securely.  
Clean the filter every two weeks  
or more often if necessary.**

- A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.



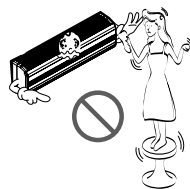
**Do not drink the water drained  
from the unit.**

- It is not sanitary and could cause serious health issues.



**Use a firm stool or ladder when  
cleaning or maintaining the air  
conditioner.**

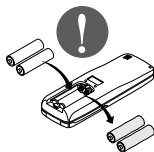
- Be careful and avoid personal injury.



## ■ Disuse

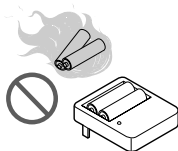
**Replace all the batteries in the  
remote.**

- There is risk of fire or explosion.



**Do not recharge or disassemble  
the batteries. Do not dispose of  
batteries in a fire.**

- They may burn or explode.



**If the liquid from the batteries  
gets onto your skin or clothes,  
wash it well with clean water.  
Do not use the remote if the  
batteries have leaked.**

- The chemicals in batteries could cause burns or other health hazards.





# Installation of Indoor, Outdoor Unit

Read completely, then follow step by step.

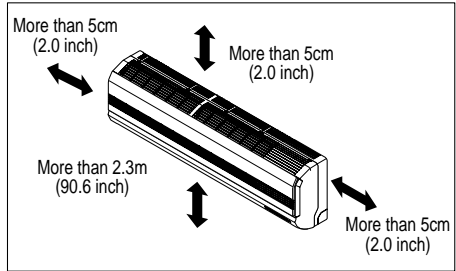
## Select the best location

### Indoor unit

1. Do not have any heat or steam near the unit.
2. Select a place where there are no obstacles in front of the unit.
3. Make sure that condensation drainage can be conveniently routed away.
4. Do not install near a doorway.
5. Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
6. Use a stud finder to locate studs to prevent unnecessary damage to the wall.



**CAUTION: Install the indoor unit on the wall where the height from the floors more than 2.3m(7.5ft).**

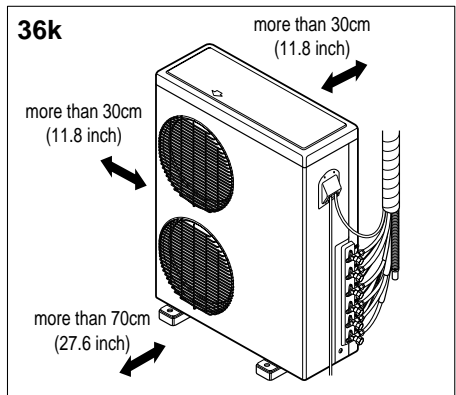
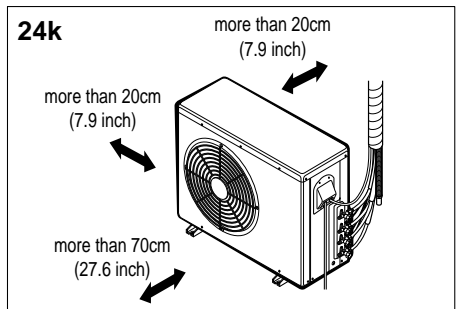


### Outdoor unit

1. If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the condenser is not restricted.
2. Ensure that the spaces indicated by arrows around front, back and side of the unit.
3. Do not place animals and plants in the path of the warm air.
4. Take the air conditioner weight into account and select a place where noise and vibration are minimum.
5. Select a place so that the warm air and sound from the air conditioner do not disturb neighbors.

### Rooftop Installations:

If the outdoor unit is installed on a roof structure, be sure to level the unit. Ensure the roof structure and anchoring method are adequate for the unit location. Consult local codes regarding rooftop mounting.

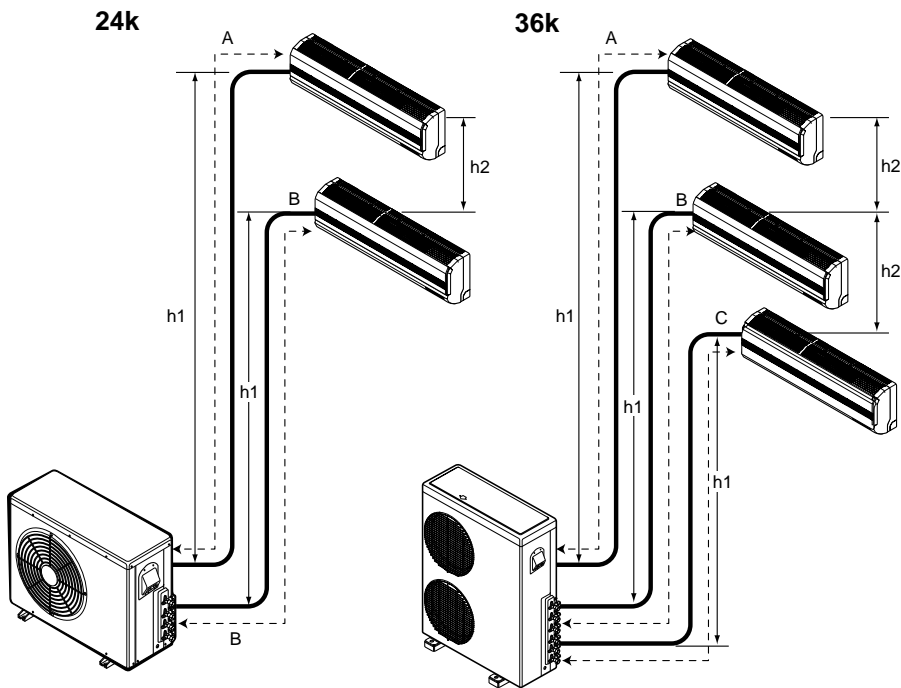


## Piping length and elevation

### Multi Piping Type

Capacity(Btu/h)	Max total length of all pipes (A+B/A+B+C)	Max length of each pipe (A/B/C)	Min length of each pipe (A/B/C)	Max Elevation between each indoor unit and outdoor unit (h1)	Max elevation between indoor units (h2)
24k	30m(100ft)	15m(50ft)	3m(10ft)	7.5m(25ft)	7.5m(25ft)
36k	45m(150ft)	15m(50ft)	3m(10ft)	7.5m(25ft)	7.5m(25ft)

Indoor Capacity (Btu/h)	Pipe Size			
	Gas	Liquid	Standard Length	Additional Refrigerant
12k	3/8"	1/4"	7.5m(25ft)	20g/m(0.32oz/ft)

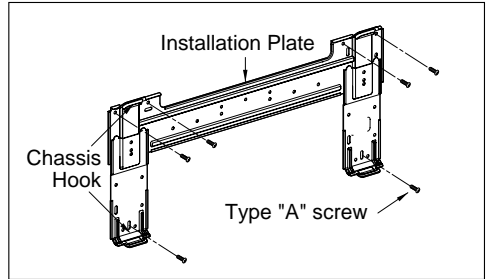


**CAUTION:** Capacity is based on standard length and maximum allowance length is on the basis of reliability. Oil trap should be installed every 5~7 meters (16.4~23.0ft).

## Fixing Installation Plate

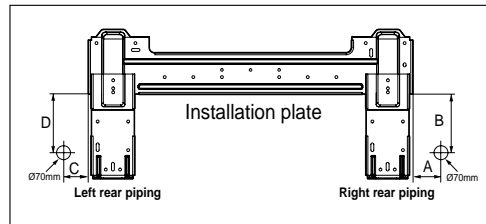
The wall you select should be strong and solid enough to prevent vibration

1. Mount the installation plate on the wall with type "A" screws. If mounting the unit on a concrete wall, use anchor bolts.
- Mount the installation plate horizontally by aligning the centerline using a level.



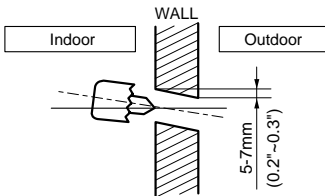
2. Measure the wall and mark the centerline. It is also important to use caution concerning the location of the installation plate—routing of the wiring to power outlets is through the walls typically. Drilling the hole through the wall for piping connections must be done safely.

CHASSIS (Grade)	Distance (mm)			
	A	B	C	D
SE	65	110	85	110



## Drill a hole in the wall

- Drill the piping hole with a  $\varnothing 70\text{mm}$  hole core drill. Drill the piping hole at either the right or the left with the hole slightly slanted to the outdoor side.



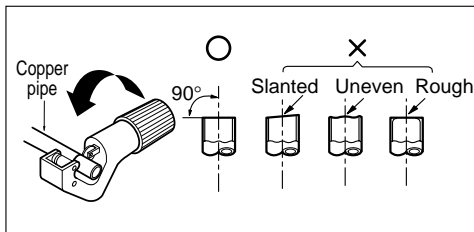
# Flaring Work and Connection of Piping

## Flaring work

Main cause for gas leakage is due to defect in flaring work. Carry out correct flaring work in the following procedure.

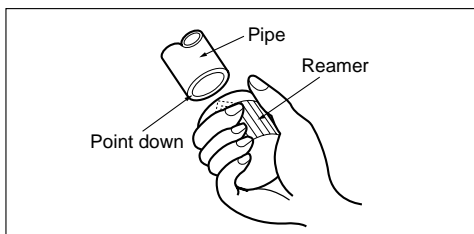
### Cut the pipes and the cable.

1. Use the piping kit accessory or the pipes purchased locally.
2. Measure the distance between the indoor and the outdoor unit.
3. Cut the pipes a little longer than measured distance.
4. Cut the cable 1.5m (5.0ft) longer than the pipe length.



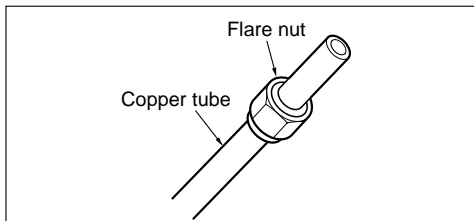
### Burrs removal

1. Completely remove all burrs from the cut cross section of pipe/tube.
2. Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping burrs into the tubing.



### Putting nut on

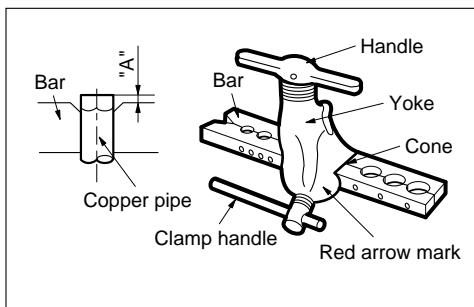
- Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal.  
(not possible to put them on after flaring work)



### Flaring work

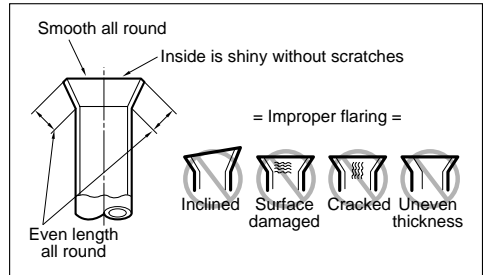
- Carry out flaring work using flaring tool as shown below.
- Firmly hold copper pipe in a die in the dimension shown in the table above.

Outside diameter		A
mm	inch	mm
Ø6.35	1/4	0~0.5
Ø9.52	3/8	0~0.5



### Check

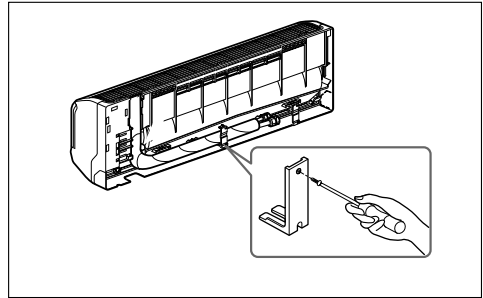
1. Compare the flared work with the figure by.
2. If a flared section is defective, cut it off and do flaring work again.



## Connecting the Piping

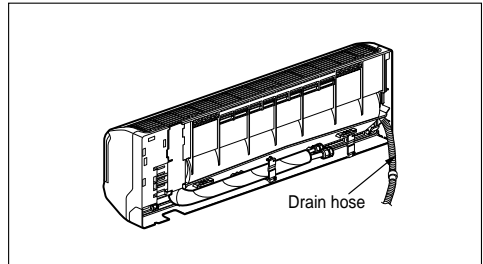
### Indoor

1. Prepare the indoor unit's piping and drain hose for installation through the wall.
2. Remove the plastic tubing retainer(see the illustration by) and pull the tubing and drain hose away from chassis.
3. Replace only the plastic tubing holder 1, not the holder 2 in the original position.



### For right rear piping

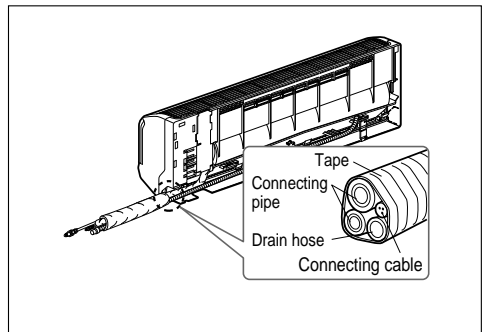
1. Route the indoor tubing and the drain hose in the direction of rear right.
2. Insert the connecting cable into the indoor unit from the outdoor unit through the piping hole.
  - Do not connect the cable to the indoor unit.
  - Make a small loop with the cable for easy connection later.
3. Tape the tubing, drain hose, and the connecting cable. Be sure that the drain hose is located at the lowest side of the bundle. Locating at the upper side can cause drain pan to overflow inside the unit.



### ⚠ CAUTION

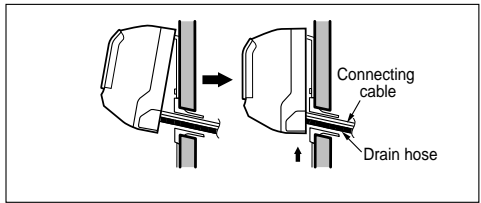
If the drain hose is routed inside the room, insulate the hose with an insulation material\* so that dripping from "sweating"(condensation) will not damage furniture or floors.

\*Foamed polyethylene or equivalent is recommended.



4. Indoor unit installation

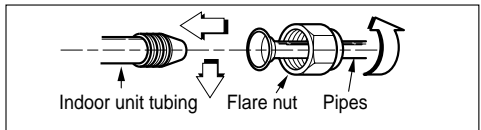
Hook the indoor unit onto the upper portion of the installation plate. (Engage the two hooks of the rear top of the indoor unit with the upper edge of the installation plate.) Ensure that the hooks are properly seated on the installation plate by moving it left and right.



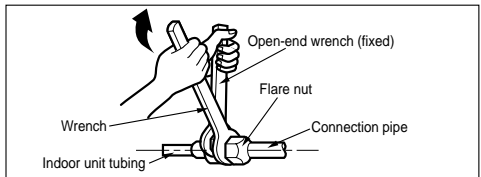
Press the lower left and right sides of the unit against the installation plate until the hooks engage into their slots (clicking sound).

**Connecting the piping to the indoor unit and drain hose to drain pipe.**

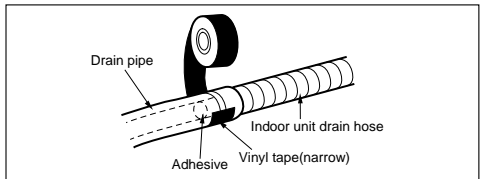
1. Align the center of the pipes and sufficiently tighten the flare nut by hand.
2. Tighten the flare nut with a wrench.



Outside diameter		Torque
mm	inch	kg·m(lbf·ft)
Ø6.35	1/4	1.8(13.0)
Ø9.52	3/8	4.2(30.4)

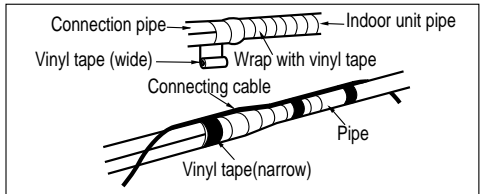
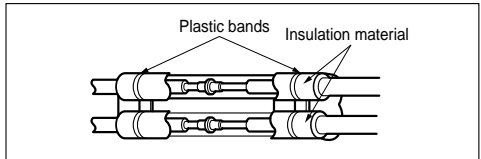


3. When extending the drain hose at the indoor unit, install the drain pipe.

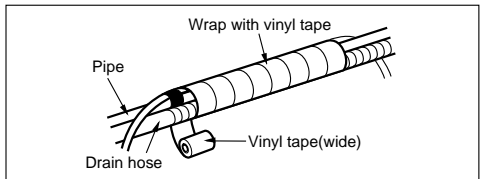


**Wrap the insulation material around the connecting portion.**

1. Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there may be no gap.
2. Wrap the area which accommodates the rear piping housing section with vinyl tape.

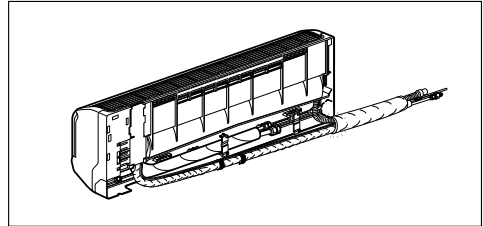
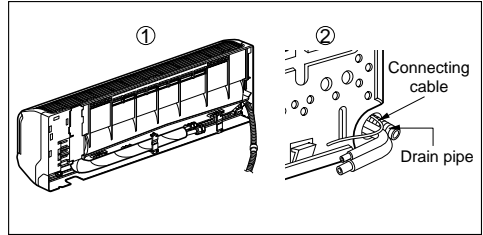


3. Bundle the piping and drain hose together by wrapping them with vinyl tape for enough to cover where they fit into the rear piping housing section.

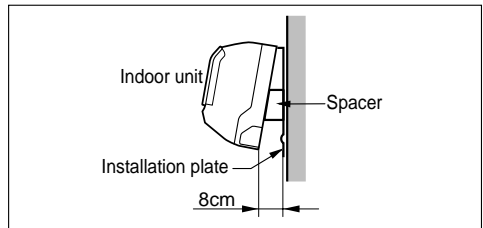


**For left rear piping**

1. Route the indoor tubing and the drain hose to the required piping hole position.
2. Insert the piping, drain hose, and the connecting cable into the piping hole.
3. Insert the connecting cable into the indoor unit.
  - Don't connect the cable to the indoor unit.
  - Make a small loop with the cable for easy connection later.
4. Tape the drain hose and the connecting cables.

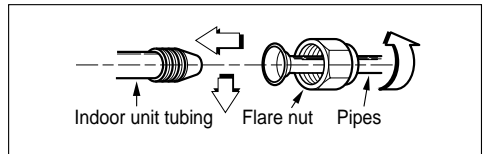


5. Indoor unit installation
  - Hang the indoor unit from the hooks at the top of the installation plate.
  - Insert the spacer etc. between the indoor unit and the installation plate and separate the bottom of the indoor unit from the wall.



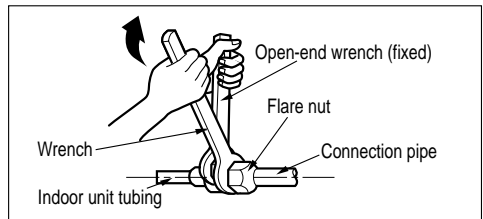
**Connecting the piping to the indoor unit and the drain hose to drain pipe.**

1. Align the center of the pipes and sufficiently tighten the flare nut by hand.

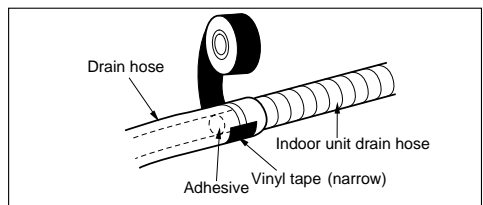


2. Tighten the flare nut with a wrench.

Outside diameter		Torque
mm	inch	kg·m(lbf·ft)
Ø6.35	1/4	1.8(13.0)
Ø9.52	3/8	4.2(30.4)

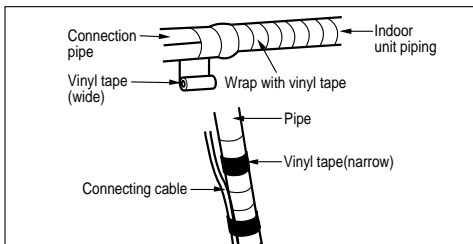
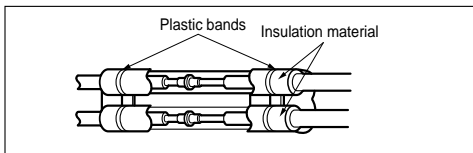


3. When extending the drain hose at the indoor unit, install the drain pipe.

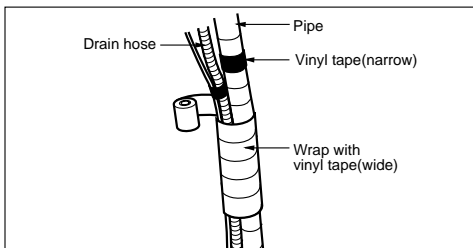


**Wrap the insulation material around the connecting portion.**

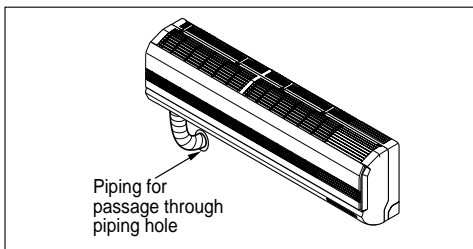
1. Overlap the connection pipe heat insulation and the indoor unit pipe heat insulation material. Bind them together with vinyl tape so that there may be no gap.
2. Wrap the area which accommodates the rear piping housing section with vinyl tape.



3. Bundle the piping and drain hose together by wrapping them with cloth tape over the range within which they fit into the rear piping housing section.

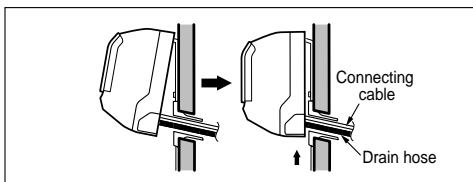


**Reroute the pipings and the drain hose across the back of the chassis.**



**Indoor unit installation**

1. Remove the spacer.
2. Ensure that the hooks are properly seated on the installation plate by moving it left and right.
3. Press the lower left and right sides of the unit against the installation plate until the hooks engage into their slots (clicking sound).



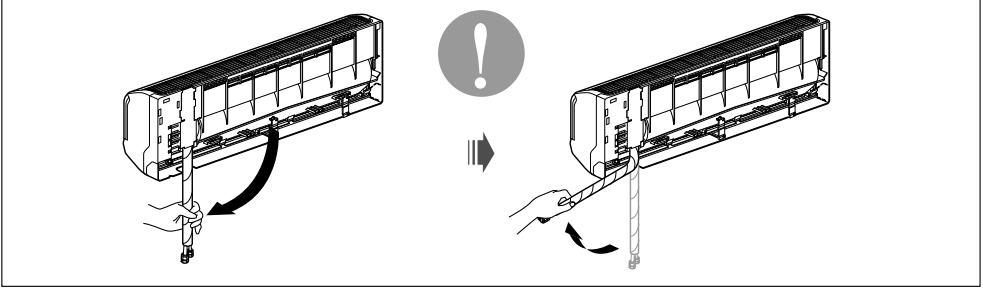


## ▲ CAUTION

Installation Information. For left piping. Follow the instruction below.

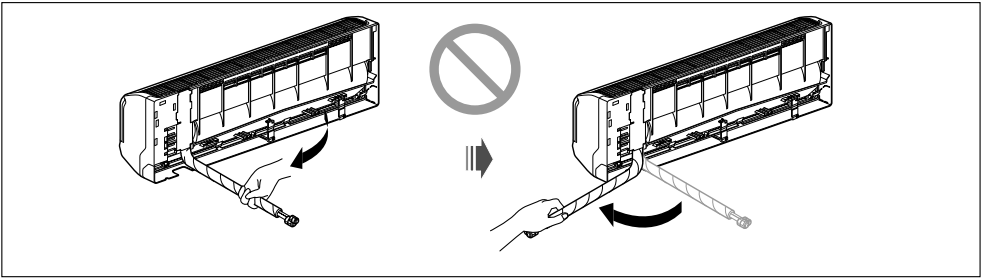
### Good case

- Press on the upper side of clamp and unfold the tubing to downward slowly.



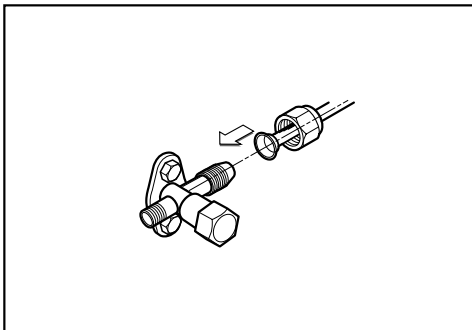
### Bad case

- Following bending type from right to left may cause damage to the tubing.



**Outdoor**

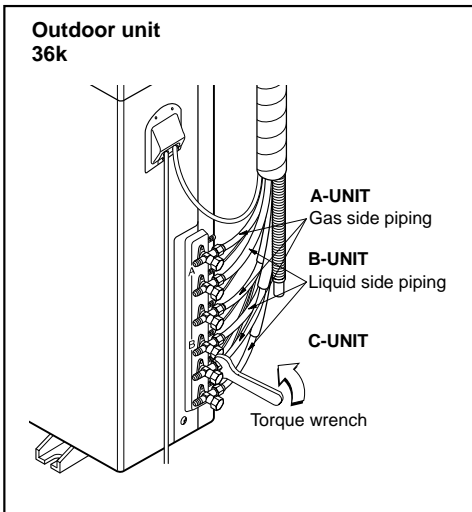
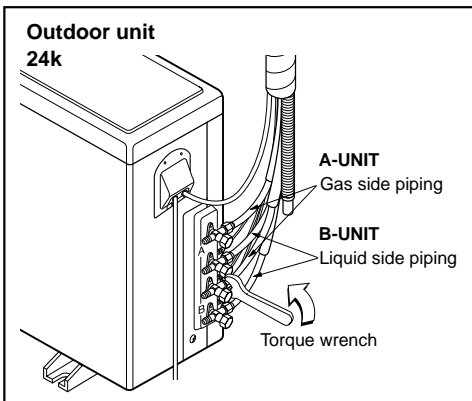
Align the center of the pipings and sufficiently tighten the flare nut by hand.



Finally, tighten the flare nut with torque wrench until the wrench clicks.

- When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.

Outside diameter		Torque kg-m(lbf-ft)
mm	inch	
Ø6.35	1/4	1.8(13.0)
Ø9.52	3/8	4.2(30.4)



# Connecting the Cable between Indoor Unit and Outdoor Unit

## Connect the cable to the Indoor unit.

Connect the cable to the indoor unit by connecting the wires to the terminals on the control board individually according to the outdoor unit connection. (Ensure that the color of the wires of the outdoor unit and the terminal No. are the same as those of the indoor unit.)

The earth wire should be longer than the common wires.

The circuit diagram is not subject to change without notice.

When installing, refer to the electrical diagram behind the front panel of Indoor Unit.

The wiring for the outdoor unit can be found on the inside of the Outdoor Unit control cover.

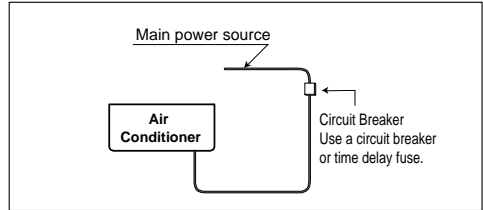


### WARNING:

- The circuit diagram is not subject to change without notice.
- Be sure to connect wires according to the wiring diagram.
- Connect the wires firmly, so that not to be pulled out easily.
- Connect the wires according to color codes by referring to the wiring diagram.



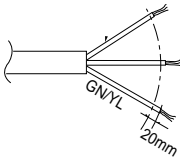
**WARNING:** Provide a circuit breaker between power source and the outdoor unit as shown below.



**WARNING!** The power wire to the outdoor unit must be of sufficient gauge to meet the Minimum Circuit Ampacity (MCA) as indicated on the outdoor unit rating plate and be of type required by NEC and local codes.

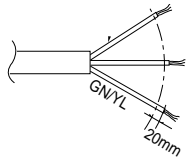
24k

Line voltage (208~230V)

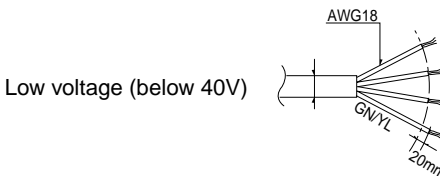


36k

Line voltage (208~230V)



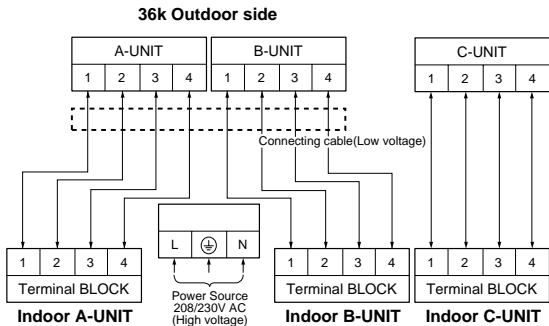
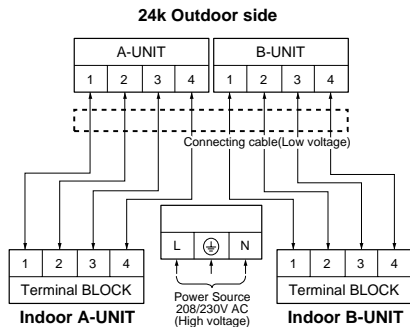
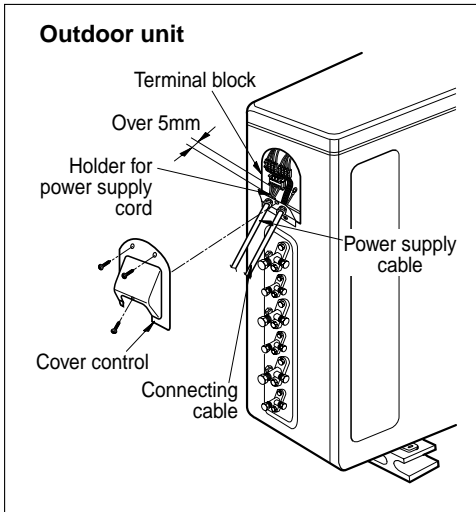
The connecting cable between the indoor and outdoor unit should be SJOW type, minimum 18 gauge, and meet requirements of NEC and local codes.



**WARNING!** Secure the interconnecting on both ends by using the clamps provided.

## Connect the cable to the Outdoor unit.

1. Remove the cover control from the unit by loosening the screw.  
Connect the wires to the terminals on the control board individually as the following.
2. Secure the cable into the control board with the strain relief clamp.
3. Refix the cover control to the original position with the screw.



**NOTICE :**

1. Separately wire the high and low voltage line.
2. Use heat-proof electrical wiring capable of withstanding temperature up to 75°C(167°F).
3. Use outdoor and waterproof connection cable rated more than 300V for the connection between indoor and outdoor unit. (For example, Type SJOW)

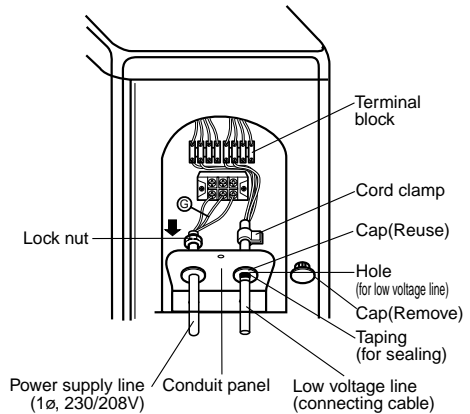


**WARNING:**

- Be sure to comply with local codes while running the wire from the indoor unit to the outdoor unit(size of wire and wiring method, etc).
- Every wire must be connected firmly.
- No wire should be allowed to touch refrigerant tubing, the compressor or any moving parts.

## Connection method of the connecting cable(Example)

- (1) Remove two-caps on the conduit panel.
- (2) Make a hole appropriate for the passage of connection cable through on cap by tool.  
(for low voltage line)
- (3) Pass the connecting cable through the hole.
- (4) Properly connect the cable on the terminal block.
- (5) Fix the connection cable with cord clamp provided on the unit not to have strain at the terminal when the connection cable is pulled outside up to a 35 pound weight.
- (6) Wind the vinyl tape round the connecting cable for sealing between the surface of the connection cable and cap.
- (7) Finally, Fix the cap to the conduit panel.



**WARNING: Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.**

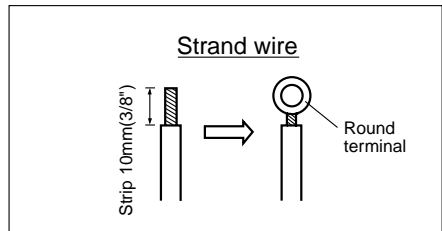
When connecting each power wire to the corresponding terminal, follow instructions "How to connect wiring to the terminals" and fasten the wire tightly with the fixing screw of the terminal plate.

### How to connect wiring to the terminals

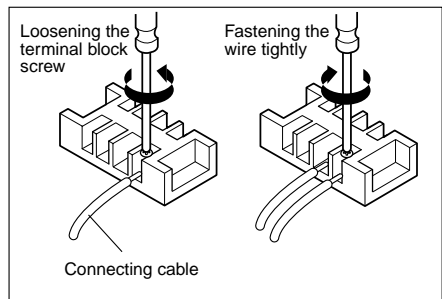
#### ■ For strand wiring

- (1) Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to expose the strand wiring about 10mm(3/8").
- (2) Using a screwdriver, remove the terminal screw(s) on the terminal plate.
- (3) Using a round terminal fastener or pliers, securely clamp each stripped wire end with a round terminal.
- (4) Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

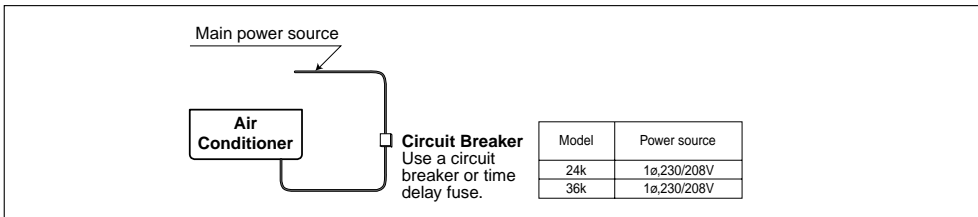
#### High voltage



#### Low voltage

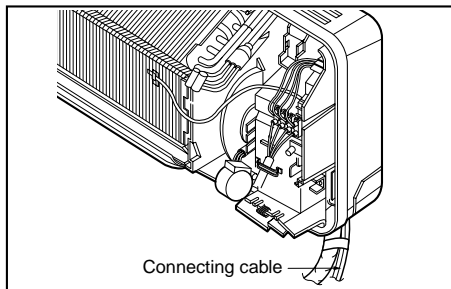


**⚠ CAUTION! Provide a circuit breaker between the power source and the outdoor unit as shown below. Size breaker per the Maximum Fuse or Circuit Breaker (MOC) rating on the unit rating plate.**

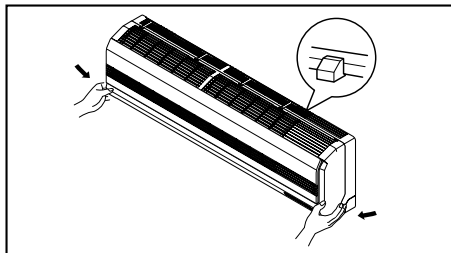


### Connect the cable to the indoor unit

1. Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
  - Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively.



2. Attach the Grille onto the cabinet.
  - Grasp the lower left and right side of the Grille and engage four tabs on the top inside edge of the chassis.
  - Press the Grille toward the chassis until it will be back into place.

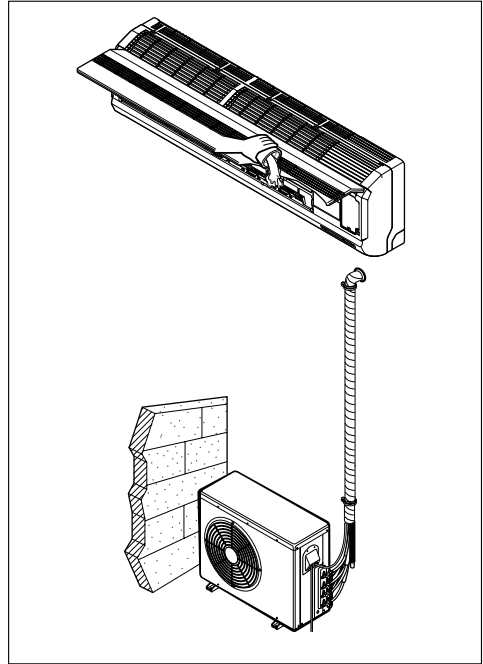


# Checking the Drainage, Forming the Pippings and Long Pipe Setting

## Checking the drainage

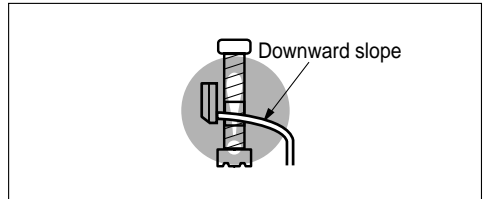
### To check the drainage.

1. Pour a glass of water on the evaporator.
2. Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.

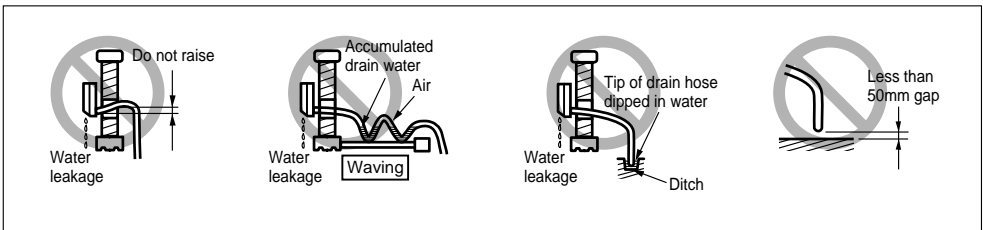


### Drain piping

1. The drain hose should point downward for easy drain flow.



2. Examples of incorrect drain piping.



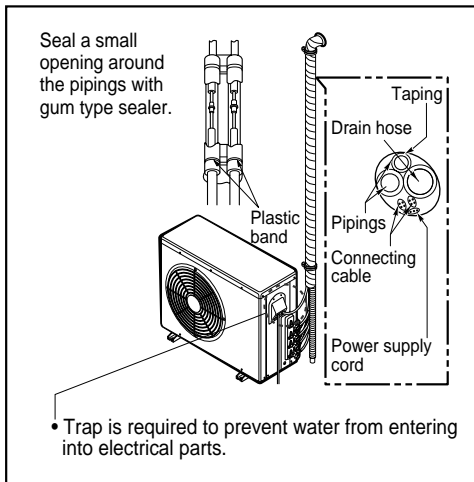
## Forming the piping

**Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tape.**

- If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

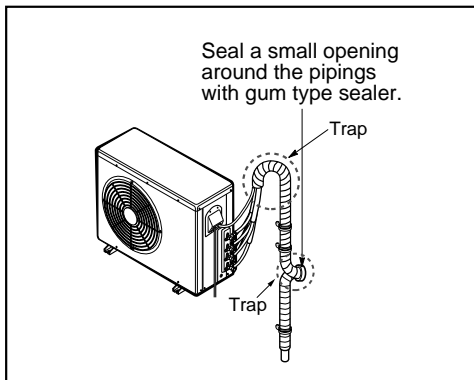
**In cases where the outdoor unit is installed below the indoor unit perform the following.**

1. Tape the piping, drain hose and connecting cable from down to up.
2. Secure the taped piping along the exterior wall using saddle or equivalent.



**In cases where the Outdoor unit is installed above the Indoor unit perform the following.**

1. Tape the piping and connecting cable from down to up.
2. Secure the taped piping along the exterior wall. Form a trap to prevent water entering the room.
3. Fix the piping onto the wall by saddle or equivalent.





# Air Purging and Evacuation

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.

1. Pressure in the system rises.
  2. Operating current rises.
  3. Cooling(or heating) efficiency drops.
  4. Moisture in the refrigerant circuit may freeze and block capillary tubing.
  5. Water may lead to corrosion of parts in the refrigeration system.
- Therefore, the indoor/outdoor unit and connecting tube must be checked for leak tight, and vacuumed to remove incondensable gas and moisture in the system.

## Checking method

### Preparation

- Check that each tube(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Check that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

### Leakage test

- Connect the manifold valve(with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

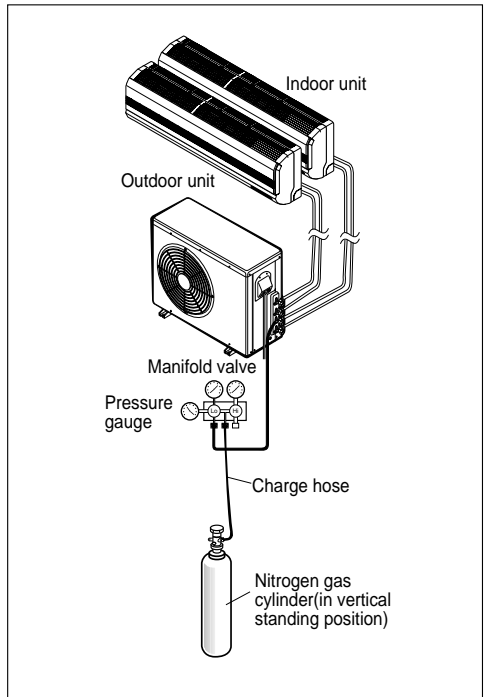
**CAUTION:** Be sure to use a manifold valve for leak testing. The high side manifold valve must always be kept closed.

- Pressurize the system to no more than 150 P.S.I.G. with dry nitrogen gas and close the cylinder valve when the gauge reading reached 150 P.S.I.G. Next, test for leaks with liquid soap.

**CAUTION:** To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

**NOTICE:** Leakage test should be done for each indoor unit connection set, separately.

1. Do a leakage test of all joints of the tubing(both indoor and outdoor) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
2. After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



## Evacuation

1. Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump. The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

Required time for evacuation when 4 cfm vacuum pump is used	
If tubing length is less than 10m (33 ft)	If tubing length is longer than 10m (33 ft)
10 min. or more	15 min. or more

2. When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.

### Finishing the job

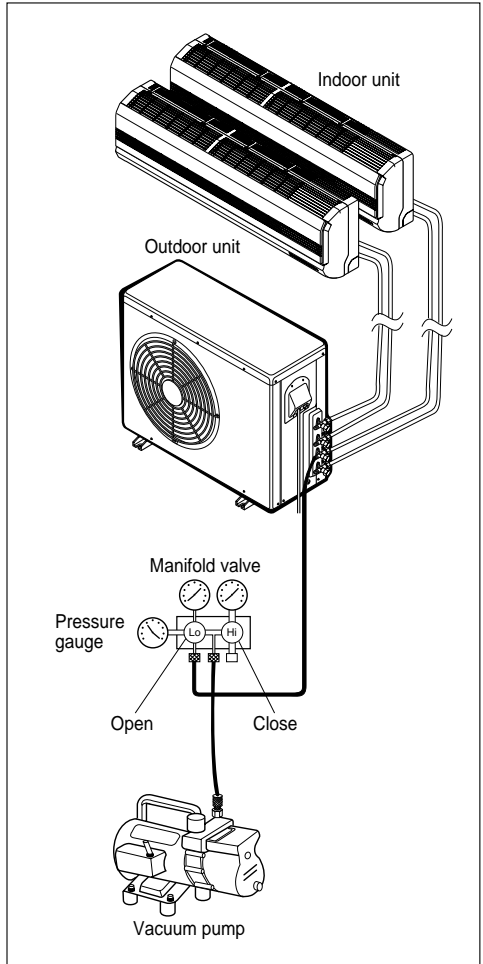
1. With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
2. Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
4. Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
5. Replace the valve caps at both gas and liquid side service valves and fasten them tight.

This completes air purging with a vacuum pump.

The air conditioner is now ready for test running.

### NOTICE

**: Repeat evacuation procedure for each indoor unit.**



# Charging

- Each outdoor unit is factory charged (nameplate charge) for the evaporator as well as a 7.5m(25ft) line set for each indoor line.  
Any time total line set is used either shorter or longer then the nominal 22.5m(75ft: for tri-zone) line set length the refrigerant charge has to be adjusted.
- Whether the line set is made shorter or longer you must adjust the charge based on how many ft of tubing are either added or removed based on 20g(0.22oz) of R-410A per meter(foot).

Capacity (Btu/h)	Max total length of all pipes (A+B+C)	Max length of each pipe (A/B/C)	Min length of each pipe (A/B/C)	Max Elevation between each indoor unit and outdoor unit (h1)	Max elevation between indoor units (h2)	Additional Refrigerant
24k	30m(100ft)	15m(50ft)	3m(10ft)	7.5m(25ft)	7.5m(25ft)	20g/m(0.22oz/ft)
36k	45m(150ft)	15m(50ft)	3m(10ft)	7.5m(25ft)	7.5m(25ft)	20g/m(0.22oz/ft)

**Example:** A 80ft line set is used for tri - zone 5 additional ft X 0.22 ounces per foot= add 1.1 ounces of R-410A

## ***Important:(Unit is critically charge)***

If you are ever uncertain of the unit charge, reclaim, evacuate and weigh in the correct charge using the unit nameplate charge adjusting for line sets longer or shorter than 7.5m(25ft) for each indoor unit.

# Test Running

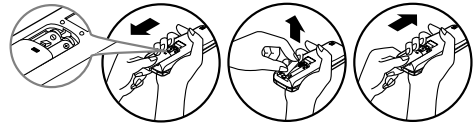
1. Check that all tubing and wiring have been properly connected.
2. Check that the gas and liquid side service valves are fully open.

## Prepare remote control

Remove the battery cover by pulling it according to the arrow direction.

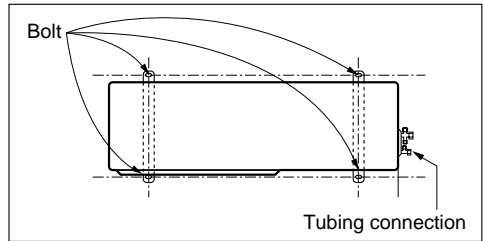
Insert new batteries making sure that the (+) and (-) of battery are installed correctly.

Reattach the cover by pushing it back into position.



### NOTICE :

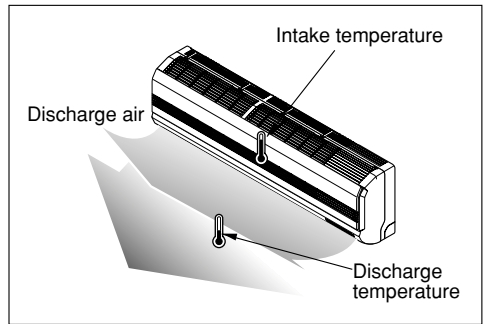
- Use 2 AAA(1.5volt) batteries. Do not use rechargeable batteries.
- Remove the batteries from the remote control if the system is not going to be used for a long time.



## Evaluation of the performance

Operate all indoor units for 15~20 minutes, then check the system refrigerant charge:

1. Measure the pressure of one of the gas side service valves.
2. Measure the temperature of the intake and discharge of air.
3. Ensure the difference between the intake temperature and the discharge is more than 8°C(14.4°F).
4. For reference, the gas side pressure of optimum condition is as below.(Cooling)



Refrigerant	Outside ambient TEMP.	The pressure of the gas side service valve.
R-410A	35°C (95°F)	8.5~9.5kg/cm <sup>2</sup> G(120~135 P.S.I.G.)

### NOTICE :

If the actual pressure are higher than shown, the system is most likely over-charged, and charge should be removed. If the actual pressure are lower than shown, the system is most likely undercharged, and charge should be added.

### NOTICE :

For maximum product life and efficiency this unit has been designed, in the heating mode, to lock-out at outdoor temperatures below 26-29°F. At outdoor temperatures below 26-29°F. another means of heating the conditioned space must be provided.

### Important:

- Individual zones should be all in the same operation mode (Heating or Cooling mode)

**Specifications and performance data subject to change without notice.**

## **HEAT CONTROLLER, INC.**

1900 WELLWORTH AVENUE • JACKSON, MICHIGAN 49203

*THE QUALITY LEADER IN CONDITIONING AIR*

P/No. : 3828A22013Z